CASE REPORT

Abdominal wall metastases due to a squamous cell carcinoma of the lung: Case report and literature review

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Introduction: At the time of diagnosis, most patients with lung cancer are in an inoperable stage, with distant metastases. Most often, these patients have metastases to the brain, adrenal glands, liver, or bones. This article presents the case of a patient with non-small-cell lung cancer (NSCLC) metastases in the abdominal wall. Case presentation: A 67-year-old patient came to our service reporting the existence of a tumor 5 cm in diameter, located at the level of the abdominal wall, without other clinical symptoms. Surgical excision of the tumor was performed. The postoperative evolution was favorable, with the patient discharged on the third postoperative day. Histological examination of the resected specimen revealed metastasis of squamous cell carcinoma of the lung. Conclusions: The appearance of a tumor in the abdominal wall of patients with NSCLC may raise the suspicion of metastasis at this level.

Keywords: lung cancer, abdominal wall, metastases

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Introduction

Metastatic non-small-cell lung cancer (NSCLC) is the most common cause of cancer death. The prognosis of these patients is particularly unfavorable, the survival rate is very low, and quality of life is severely affected [1,2]. Smoking is the main risk factor for lung cancer. Of all histological types of lung cancer, NSCLC accounts for approximately 85% of cases [3].

At the time of diagnosis, approximately 55% of patients with NSCLC have distant metastases and are not surgically resectable. The long-term survival of these patients is particularly low: the 5-year survival rate in stage IVA disease is around 10%, and in stage IVB disease, it is less than 1% [4].

This manuscript presents the case of a patient whose symptoms were represented by the appearance of a tumor in the abdominal wall that turned out to be a metastasis of NSCLC. Initially, the patient showed no symptoms in the respiratory tract.

Case presentation

A 67-year-old patient, approximately 2 months before presentation to the doctor, noted the appearance of a tumor at the level of the abdominal wall, which progressively increased in size. At the time of presentation, the patient had a tumor at the level of the left abdominal flank with a diameter of around 5 cm. It was painless, firm, and relatively well-delimited by the surrounding tissues. At the time of diagnosis, the patient had no other clinical symptoms that would raise suspicion of another condition. Contrast abdominal computed tomographic (CT) examination revealed no lesions in the abdominal viscera, only identifying the presence of tumor in the abdominal wall. Therefore, surgical excision of the tumor was proposed.

Before surgery, a chest X-ray was performed, showing an inhomogeneous lung opacity in the lower left hemithorax, around 7 cm in diameter. This opacity had irregular edges with spiculiform extensions. Considering the radiological examination, a chest CT examination with contrast was performed. It revealed a tumor in the left lower lung lobe of an inhomogeneous structure, with areas of necrosis and cavities, with a diameter of 75/96/85 mm. It extended from the left pulmonary hilum in the mediastinal pleura, causing obstruction of the left lower lobe bronchus, producing atelectasis of the left lower lung lobe. The CT also revealed multiple left and mediastinal hilar enlarged lymph nodes, many over 1 cm in diameter (Figure 1).

In the interdisciplinary oncological commission, given the suspicion of the existence of a tumor metastasis at the level of the abdominal wall, the first therapeutic option recommended was the excision of the tumor. The postoperative evolution of the patient was favorable, and they were discharged 3 days postoperatively.

Histological examination of the resected specimen revealed an abdominal wall tumor that was located deep within the soft tissues, also it reveals a skin fragment lined with intact keratinized stratified squamous epithelium. In the dermis, the existence of breaches and invasive tumor plaques was highlighted, consisting of a tumor prolifera-
tion of squamous cells with moderate cito-nuclear atypia and atypical mitotic figures. In the middle of some plaques, keratinization phenomena and foci of necrosis were observed. Immunohistochemical examination showed that the tumor cells were p40, CTK 5/6, and EMA positive. No perineural or lymphovascular invasion was found, and the lesion was excised within surgical safety limits. A metastasis of squamous cell carcinoma was found in the abdominal wall (Figure 2).

The genetic study of the resected specimen was negative for EGFR and ALK mutations, and the tumor proportion score for PD-L1 was higher than 1%. Given the squamous subtype and the metastatic stage of the disease, first-line systemic therapy was initiated. This consisted of pembrolizumab-type immunotherapy, at a standard dose of 200 mg, and chemotherapy Paclitaxel 200 mg/mp, in combination with carboplatin (area under curve = 6), with appropriate premedication, was administered at 21 days. No acute reactions or late toxicity were registered after administration. After 4 cycles, maintenance treatment was given, consisting of pembrolizumab up to 35 cycles. Additionally, the patient underwent adjuvant radiotherapy divided into 2 courses in the abdominal wall, the total dose being 42 Gy. At 1 year after surgery, the patient is in good general condition. The lung tumor is stationary according to imaging examinations, which have found no local tumor recurrence or appearance at the level of the abdominal wall or other distant metastases.

Discussions
Histologically, there are 3 predominant types of NSCLC (squamous cell carcinoma, adenocarcinoma, and large-cell carcinoma), but there are other less common types as well [5]. Patients with lung cancer are often diagnosed with distant metastases and thus considered inoperable at the time
of diagnosis. Lung cancer most commonly metastasizes to
the brain, bones, adrenal glands, or liver [6]. At the time of
diagnosis, 20–40% of patients with NSCLC have distant
metastases [7]. Interestingly, no published cases in the Eng-
lish literature attest to the possibility of NSCLC metastases
in the abdominal wall as in our case. Metastases occur most
frequently in young patients, more frequently in women,
and especially in small-cell lung cancer (SCLC) [8].

Studies have shown that, depending on the histological
type of lung cancer, a higher probability exists of metas-
tases in certain organs. For example, in SCLC, metastases
most commonly occur in the brain and liver. At the time
of diagnosis, 17% of patients with SCLC have liver me-
tastases, whereas only 4% of patients with NSCLC have
liver metastases [9]. Additionally, at the time of diagnosis,
patients with NSCLC are less likely to have distant metas-
tases compared to patients with SCLC [10].

The diagnosis of the histological type of lung cancer is
particularly important in clinical practice, in terms of both
therapeutic attitude and prognosis. Therefore, immuno-
histochemical examinations are important in establishing
a correct histological diagnosis. Lung cancer metastases
usually retain the histological features of the primary tu-
mor. TTF-1 is a specific marker for thyroid carcinomas
and pulmonary adenocarcinomas but also occurs in neu-
roendocrine carcinomas [11,12]. Another immunohisto-
chemical marker used in the histological diagnosis of lung
cancers is napsin A, which is particularly useful in dif-
ferentiating pulmonary adenocarcinomas from squamous
cell carcinomas. Napsin A may also be positive in clear-
cell renal cell carcinoma, clear-cell ovarian carcinoma, and
endometrial carcinoma [13,14]. Cytokeratin 5, p40, and
p63 are positive in squamous cell carcinomas. However,
cytokeratin 5 is also positive in thymomas, mesothelio-
mas, salivary gland carcinomas, and urothelial carcinomas
[15,16]. Cytokeratins 7 and 20 are useful in differentiat-
ing lung, breast, and ovarian tumors from colon, prostate,
and kidney cancers [17].

In the last 15 years, the oncological treatment of lung
cancer has made great progress in both its principles and
results. The greatest benefit has been the introduction of
immunotherapy in patients with metastatic lung cancer.
Tumor cells have specific antigens on their surface, which
can be targets for specific molecules, ultimately leading to
the destruction of tumor cells [18,19].

Despite the progress made in the treatment of these
cases, as well as the understanding of the mechanisms of
metastasis in lung cancer patients, the survival rate of un-
treated patients is a maximum of 1 year [20]. Therefore,
treatment is essential for their prognosis. In patients with
single metastases in the brain, liver, or adrenal gland, sur-
gery to resect the metastases may be a therapeutic option in
conditions where complete removal of the lung tumor can
be performed in the chest. However, in clinical practice,
very few patients can lend themselves to such a therapeutic
attitude, so oncology treatment is crucial.

First- and second-line treatment for patients with meta-
static lung cancer uses the inhibition of driver genes and
systemic chemotherapy [21,22]. Systemic chemotherapy
for these patients is performed with conventional chemotherapeutic agents, inhibitors of tumor angiogenesis, and
inhibitors of tumor metastasis. The most commonly used
systemic chemotherapy agents in patients with advanced
NSCLC are platinum derivatives [23]. If the therapeutic
attitude of these patients is clear in the first 2 lines of treat-
ment, starting with the third line of treatment, the therapeu-
tic options are limited. Recently, positive results have
been obtained using thyroid kinase receptor inhibitors
[24,25].

One of the biggest advances in the last decade for pa-
tients with metastatic NSCLC is the combination of im-
munotherapy with platinum derivatives in systemic chem-
otherapy. The introduction of immunotherapy to clinical
practice for these patients was based on the discovery of the
clinical significance of PD-L1 gene mutations in patients
with NSCLC. Pembrolizumab therapy has been effective
in patients with a PD-L tumor proportion score greater
than 1% [26]. This is why pembrolizumab treatment was
introduced for our patient.

Radiation therapy is also available for local control of
the disease, especially in patients with NSCLC [27]. Of
all the ways to treat lung cancer, radiation therapy is the
only method that can be applied regardless of the patient's
clinical status, especially in advanced stages of the disease.
Thus, over 70% of patients with NSCLC will at some
point benefit from radiation therapy [28,29]. Newer stud-
ies have shown that increased radiation doses in patients
with metastatic NSCLC are associated with slowing of the
local course of the tumor [30]. Studies have also shown
that in patients with stage IV NSCLC, the combination
of palliative radiotherapy with systemic chemotherapy and
immunotherapy can lead to increased the survival rate
[31]. This is why we combined radiotherapy with systemic
therapy in our case.

The particularity of this case is in the appearance of a
metastasis in the abdominal wall in a patient with NSCLC,
as the first manifestation of the disease, the patient being
completely asymptomatic regarding the respiratory system.
Additionally, no published studies in the English literature
to date have attested to the occurrence of metastases in the
abdominal wall in patients with NSCLC.

Conclusions
The appearance of a tumor in the abdominal wall in pa-
tients with NSCLC may raise the suspicion of a metastasis
at this level.

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The authors declare no competing interests.

Authors' contribution
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